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MAGIC LANTERN

JOURNAL

AND

PHOTOGRAPHIC ENLARGER.

EDITED BY J. HAY TAYLOR.

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CONTENTS.

	PAGE
Notes	17
Tools for Cleaning Glass Plates	19
"Hints," and how to make Direct Positives in the Camera	20
An 8 ft. Screen Stand for 5s.	22
Slides for Science Teachers.—No. III.	23
How to Economise	24
The Birth of the Limelight.—No. I.	25
How to Doctor Broken Negatives	27
The Triple Lantern	29
Apparatus for making Lantern Slides	30
Signals	31
Modern Optical Illusions.—VI.	33
New Apparatus	35
Editorial Table	36
Patent Intelligence	36
Correspondence.—Lantern on Sunday in Scotland	37
Copying Hired Slides	37
Experiments with Saturators	37
Hanstangel *v.* Tyler	38
Notes and Queries	38

Notices.

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Notes.

ON another page will be found a letter of complaint signed by "One who wants to live." With reference to a portion of his letter he has a simple remedy. As he took the negatives, the copyright is his, and on registering a print at Stationers' Hall, which costs a small fee, he can then proceed against the offenders for infringement. Infringement of copyright is sometimes expensive.

* * *

A PHOTOGRAPHIC telescope with half-a-dozen cameras has been completed for the Yale observatory.

* * *

STEADILY the usefulness of the lantern for teaching is gaining ground, and among the latest subjects for which it has been called into requisiton we find that of shorthand, and a lecture so illustrated by Mr. G. Higgle, at West End Hall, was greatly appreciated.

* * *

A CORRESPONDENT writing respecting life model slides, states that "fully one half upon the market are perfectly absurd, as the figures are represented by those quite unaccustomed to act in such capacity. Too many of them have the appearance of the models having a quiet game to themselves, and when they should appear animated they are sombre during the exposure, and when supposed to be of a sad effect a suppressed smile is often found lurking round the mouth. Until trained models are used and not any shop assistants who happens to be young or old, according to the character desired, are employed, one cannot expect to find a complete set; true, now and again a good slide is obtained, but it is greatly a matter of chance, and until trained actors and actresses are employed for the purpose, and that, too, after rehearsals, we cannot expect to have satisfactory life models."

* * *

In future, Brin's Oxygen Company intend adopting two trade marks, one for their gas, and the other for their cylinders.

* * *

The *City Press*, of recent date, contains the following letter:—"Can any of your readers inform us whether all the tradesmen of Cheapside have the right to use a "limelight," showing from any part of their premises, and to move it about as a search light? What would be the effect if they all exercised the right? To have a dazzling light directed up Cheapside, from end to end, seems to be calculated to bring about accidents in the traffic and to injure the eyesight of pedestrians, besides being an objectionable nuisance."

* * *

The Princess Louise, who is considered very good at sculpture, is having photographs taken of her handiwork, with a view to making slides from the negatives.

* * *

A patent has been taken out by Mr. Geo. Dickinson for a new hand camera which is being manufactured by Marion & Co. In the specification he says: "I provide a suitable closed box or camera in which a lens and shutter may be used in the ordinary way. Into this camera and opposite the lens is a rectangular frame, acting as a plate or film holder, having projections in its inner four corners or angles, so that the sensitive sheets or plates, and cardboard, or other intercepting medium, or the sensitive sheets or plates only, with or without sheaths when placed at right angles and in opposition transversely across each other, may be supported and allowed to fall at the will of the operator by revolving or raising and lowering eccentric or alternating catches working at opposite sides or corners in such a manner that, at each movement, one of the sheets or plates is displaced, removed, and succeeded by another.

In connection with experiments with glass tubes filled with phosphorescing sulphides of barium, calcium, &c., which have been exposed to sunlight and then subjected to a temperature of 100c, which during the time of their return to normal temperature exhibited phosphorescent signs, M. Raoul Pickett, of Geneva, considers that it is due to the freezing or arrest of certain molecular particles, the calorific oscillations of which produce the phenomena of light.

* * *

One of the most expensive lantern slides lately made was manufactured by Mr. Walter Tyler. It cost him altogether about £250. Particulars can be ascertained from his letter on another page. We learn that he has made arrangements with several art publishers for the exclusive copyright of lantern slides for certain scripture subjects.

* * *

The Lantern Bureau, which was founded by Mr. W. T. Stead, of the *Review of Reviews*, has been transferred to Mr. F. N. Eaton, whose headquarters are at 29, Queen Anne's Gate, S.W.

* * *

Messrs. Taylor, Taylor, and Hobson have done much in this country to further standard lens-screws and fittings, and have sent to the American Institute a case for exhibition containing twelve adapters of varying sizes, which screw one inside the other, so that it is a simple matter either to attach a large or small lens.

* * *

A new illuminating gas, called Acetyline, has been experimented with, and it is said to be the future gas for general illumination, inasmuch as it gives a splendid light. It can be made in solid rods, which require to be merely placed in water when a supply of gas is required. It is also stated that the intensity of the new illuminant will make it of enormous value for lantern projection. A lecture on this subject was lately given at the Society of Arts by Professor Vivian B. Lewes.

* * *

Up to the present, only on a few occasions has the lantern been used at the Royal Albert Hall, and at each the entire arrangement has been under the care of Messrs. Noakes and Son, of Greenwich. Those who have had dealings with this firm know that when they undertake anything they do it in a thorough and efficient manner. Their last appearance there was on a recent date, and so well were matters carried out that until the time for showing the pictures there were no visible signs that the lantern was to be used. But then Messrs. Noakes have an ingenious mode of arranging matters, for when the exact time arrived for the projection of the pictures by means of the lantern, a huge screen of 200 ft. pitch, which was partly hidden behind a projection, was drawn across, when at the same time the light was raised in the lantern, which was situated in a box in the royal tier. As this hall was to an extent kept lighted throughout the entertainment, it was, of course, necessary that the illuminant in the lanterns be powerful, and by means of Messrs. Noakes' well-known jets this was ample. This firm manufacture the goods they use, and they sell exactly the same as they use themselves; and on another page it will be seen that they sell either the identical lantern that may on any occasion be used to show excellent results, or a duplicate of such, and in the latter case they offer a practical demonstration. Nothing can be fairer. We understand that Mr. D. W. Noakes is always willing, should his time permit, to personally conduct anyone interested over the workshops, and to explain instruments in course of construction.

* * *

It seems the fashion for certain dealers and photographic societies to publish a small monthly. The latest is *Jottings*, the journal of the Hackney Photographic Society, which commenced its career on January 1st. As the "hon. secretary" and "editor" are alluded to in the journal, it might not have been out of place if the readers had had an opportunity of reading at what address they could be communicated with. It is stated that the meetings are held at "Pembury Hotel," Amhurst-road, Hackney, but surely the editor does not call there daily to ascertain if there are any letters for him.

* * *

An improved oxygen generator and holder has been patented by Mr. George R. Prowse, Montreal, Canada. This is an improvement upon a formerly-patented invention of the same inventor, providing an automatic device for moving the generating burner by a step-by-step movement, bringing the flame on one after another of the pockets of the retort, the movement being controlled by the descent of the top of the gasometer. A slide on a rachet bar at one side of the gasometer casing carries a burner under the oxygen generating retort, a plate having a series of hooks attached to the top of the gasometer engaging a spring-pressed bolt carried by the slide, while an adjustable spring-actuated arm moves the burner forward as it is released.

* * *

As we are interested in mechanical appliances, we recently had an invitation to visit the workshops of Mr. F. Brown, of 11 and 13, Ossulston Street, N.W. (not number 3, as inadvertently stated in his advertisement in our January issue), to see some new lathes known as Pittler's Universal, which he had recently had fitted in place of others. The Pittler lathe is truly a wonderful machine, and upon it can be done every conceivable kind of turning, milling and machine work. There are attachments innumerable which can be applied to this lathe, as it is provided with a round saddle with attached socket ring. Every fitting is provided with an index, so that, should one make any particular article, all one has to do is to keep a record of the indices, when an exact duplicate can be made at any future time without pattern. What the lathe can do would take up several pages of printed matter, but these can be combined by saying that it will do any and everything. On it we saw most of the respective parts of the Gridiron saturator, jets, and limelight fittings, made and finished in an excellent manner simply by attaching, then setting the various indices and feeding certain parts by a handle, others being automatic.

* * *

A somewhat amusing instance occurred the other evening in London, during a lantern lecture. The lecturer remarked that the picture now before them, illustrated a certain gentleman at his scientific studies, which should have represented him engaged in microscopical research. Instead of this slide however, one illustrating a gentleman dining in an elegant restaurant, was on the screen. He had omitted to ring on the next slide, and it was some considerable time before proceedings could be resumed, on account of the amusement to the audience.

———:o:———

A Tool for Cleaning Glass Plates.

A correspondent has sent us the sketch, Fig. I., as it represents a tool which he made some time ago for the purpose of cleaning off spoilt negatives or lantern plates, so that the glass might be turned to account for the purpose of being used as cover glasses. A represents a flat piece of wood shaped as shown, the portion marked F being used as a handle. E E E E E E represent six brass pins, with round heads standing a quarter of an inch out of the holder for the purpose of keeping in position the plate (C) to be cleaned. In order to facilitate the removal of the glass there is a slight singeing in the holder at D, so as to admit of the finger and thumb catching hold of the glass. The glasses having been soaked in hot water, they are slipped into position on the holder, and a little application of scrubbing by means of an old nail brush serves to quickly remove the gelatine film, leaving the glass clean. When not in use it can be hung on a nail by means of the hole (B).

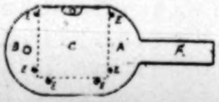


Fig. 1.

The foregoing is certainly a great advance on holding the plate in the fingers during the performance of cleaning, but we hardly think it comes up to a little article not altogether unknown in the old collodion days, when it was necessary for one to clean the glass plates in a very thorough manner previous to coating them with collodion. In the former holder we have six projecting pins or nails, and although when scrubbing the plate with a brush they are not in the way, still for final polishing by means of a rag or chamois leather they are apt to catch at times. We have unearthed the holder which we used to employ some years ago, and from it have made the sketch Fig. II. A is a flat piece of wood with the end formed in a handle as at D. For holding lantern plates a square of a trifle over 3¼ in. is cut, as at B, so that the plate when laid in this square has its upper surface level, or almost so, with the holder. Glass can, in this position be either scrubbed, or polished, and there is no fear of meeting with any projections on which to catch the material used. Should the plate be a somewhat tight fit, a lead pencil may be pushed through the hole (C) from the under side to facilitate matters. In the particular holder mentioned, the other side of the board is cut in a similar manner, but of the dimensions of a quarter-plate.

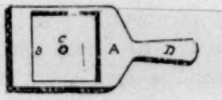


Fig. 2.

The employment of a simple tool of this description has a tendency to save not only the cutting of fingers, but sometimes the ejaculation of certain big words which need not here be repeated. We think there is an opening for the re-introduction of this simple apparatus at a moderate price. Who will do it?

——:o:——

"Hints," and how to make Direct Positives in the Camera.

By a Lanternist.

It has often been remarked that the ardour and earnestness which amateurs exhibit at the commencement of the practice of the photographic art, generally abate with somewhat remarkable rapidity, until, at length, the productions and apparatus of which they were once so proud, are later looked on with indifference. The reasons why, are many. Having overcome the preliminary obstacles, and arrived at the stage of being able to produce a good negative with tolerable certainty upon small plates, the amateur is seized with the idea of producing large work; those marvellous miniature representations of Nature which so delighted him, now annoy him by their insignificant dimensions, and with something closely akin to his original ardour, he procures a larger outfit and proceeds to work. But now he finds that his difficulties increase in proportionate *ratio*. It is far from easy to find good and suitable subjects, and somehow or another, the large pictures do not produce the satisfactory or expected effect anticipated, and as to the failures, which will come, he repines over the waste of material which the spoiling of large negatives entail. In a short time he shelves the whole thing in disgust, and he drops out of the ranks of the fraternity of photographic amateurs.

There is no reason why this should be. As a hobby, as a recreation for leisure hours, there is no occupation in my mind so delightful as photography.

The knowledge and power of being able to reproduce an object in all its minutest details is a glorious and wondrous one, and unlike many other amusements or intellectual pursuits, leaves a result behind which is capable of imparting pleasure to a whole circle of friends.

As a rule, amateurs attempt too much. Being allowed limited space through the kindness of our Editor, these lines are penned with the hope of re-awakening in some amateur's mind his former ardour in making the pursuit of which erstwhile he felt so eager a delight.

Let the amateur, then, resolve to stick to a small size, say quarter or lantern plate; let the lenses and apparatus be of the best quality (for these sizes the outfit need not be too expensive); provide yourself with the apparatus and a box of collodio-bromide plates, and a very moderate expenditure of time and skill will enable anyone to produce excellent negatives with them. A quarter-plate camera, etc., packs into a very small space, and can readily be taken anywhere; it never becomes burdensome as a large apparatus does; it can be taken as a companion on an excursion without spoiling one's pleasure or causing a depressing degree of fatigue. But granting all this, and that quarter-plate negatives of satisfactory quality can be produced with a fair amount of certainty, what is the good of this small negative? How can we look at the large size of others, and be content with our pigmy? In this way: Buy a good optical lantern, preferably one fitted with the oxy-hydrogen light. But here we may be met with the objection that it will be necessary to produce a suitable transparency from the negative, and this is what some fail to do. No doubt, making such a transparency is difficult; it is certain too, that neither printing by contact, nor by the aid of the reducing camera, can do justice to all the beauties of a first-class negative. But now an important fact in connection with the collodio-bromide plates comes in. It is possible by this process to produce in the camera either a negative or a transparency, according to the operator's will; and this, either direct from Nature or from copies at one operation, will be found indefinitely to surpass some taken by the other methods. Placed under a powerful magnifying glass the image is found to be of the greatest imaginable delicacy, and will bear a magnifying power of some twenty diameters, with scarcely any appreciable loss of clear, sharp definition; and it will compare favourably with those transparencies of—well, I won't mention names—which have always been deemed unrivalled. For those who are unacquainted with this application of the collodio-bromide process, brief instructions are appended, which I have used for over twelve years, and which, if attended to, will infallibly produce results that will delight the heart of the operator.

A collodio-bromide plate is exposed in the camera for a time, about one-third longer than would be necessary for a good negative. I have found that to be as nearly correct as possible, either for outdoor work or copying; then develop with a strong alkaline pyro-developer. The plate must be thoroughly washed. Instead of fixing in the ordinary way, take the plate upon a pneumatic holder, and then rub some india-rubber solution ($\frac{1}{16}$ of an inch) round the negative. This should be done before development Then pour near the centre of the washed negative a small quantity of the best and purest nitric acid (HNO_3). Make this flow over the plate in a manner similar to varnishing, and watch what magical and beautiful results follow.

The nitric acid attacks and almost instantaneously dissolves the image formed by the action of the developer, and leaves behind only that portion which hyposulphite would have removed. A very delicate transparency is the result. If the exposure had been nearly correct, the sky (or white portion of original) will be represented by absolutely bare glass, without the faintest trace of a deposit on it; if under-exposed or under-developed, a fogged film will remain, which the acid has had no effect upon. The development must be pushed much more than an ordinary negative. A very good idea may be formed as to how far the development has been carried by looking at the back of the plate, where all the details should be as plainly seen as upon the film side. Now, taking it up to so far we have made a successful transparency, we find it so thin and fine that many of the details are hardly visible; we next, after washing the negative to thoroughly take the acid off, expose the transparency for one or two seconds to diffused daylight, or for ten to twelve seconds to a No. 4 Bray's burner. The transparency then turns instantly a bluish colour.

Now take it back into the dark-room, and pour the remaining portion of the alkaline developer over it. The image darkens almost directly, and if the intention is to make a lantern slide (which, I presume, we are doing), great care should now be taken to avoid too much density. If thought necessary, the developer can be weakened by adding a small quantity of water to it (half of the bulk would do); then it is more under control, as the toning of the transparency proceeds more slowly.

In producing transparencies by this method, great difficulties have been experienced in keeping the film on the plate, after pouring on the acid, without the rubber solution; and, indeed, a simpler method to those who prefer it is to draw a tallow candle round the edges of the plate, so as to leave a slight margin of grease. Both the solution or tallow are proof against the action of the acid, and they effectually repel all moisture. This latter operation takes only a moment, and should be performed on the dry plate before it has been wetted in any way. Use the candle just as one would a stone if we wished to roughen the edges of the glass. This method is a perfect cure for slipping of the film in dry plate work, and water may be poured on with moderate good force without in any way damaging same. All dry-plate workers are asked to give this method a trial. It is necessary to give full exposure, but take heed and do not over-expose, the results of which are quite as bad as those of under-exposure. On the whole the timing of the exposure is the only difficulty in the process.

If you are a beginner, set up your camera before a suitable copy, focus carefully, and use a magnifying glass. Then put in the dark slide with a plate, and draw the shutter about an inch. Expose that slip of plate say ten seconds; then draw the slide back another inch, and give another ten seconds—this will make twenty seconds for the first slip—and proceed in this way till the whole of the dark-slide is drawn out.

Upon developing and completing the plates the strip that received the proper exposure is readily seen, and the under-exposed will be foggy. The one over-exposed will be so thin as to be scarcely visible, whilst the finer details, will have disappeared; and especially will this be noticed if this trial plate had been exposed on a landscape, by watching the horizon line. It sometimes happens that after the completion of the second application of the developer the transparency will not possess sufficient density to make a good slide. In this case, after a thorough good washing, flow the plate with a solution of chloride of copper—a saturated solution to which an equal bulk of water has been added answers well. The effect at first is to change the transparency to a pleasing brown. If the action is to be stopped, flood the plate with clear water at once. If the solution remains on longer, the transparency will gradually whiten until the image almost disappears. At this point, thoroughly wash and pour on some more developer; a vigorous image will immediately come out, and here care must be taken not to make it too dense.

To any person having a knowledge of the development of dry plates, success in making these transparencies is guaranteed if he would only obtain a few collodio-bromide dry plates from lantern up to any size, and patiently experiment with them upon one subject after reading and following the above lines.

A few lines more and I must pull in the reins. The value of these direct transparencies for enlarging purposes generally wants some beating, and the method is valuable also for producing photographs of microscopical objects. These transparencies are made at one operation and with ease, and an idea of their superior quality can only be obtained by trying one of them in a good optical lantern. By taking these small transparencies, then, instead of taking negatives, the amateur will be able, by the optical aid just mentioned, to show his pictures of far greater dimensions than any enlargement could attain, and the brilliancy of the effect surprises and delights the many—I may say thousands that I have had the pleasure of showing them to (by a bi-unial). By the least expenditure of time and trouble, one may have his large pictures, no printing, toning or mounting, and only one set of operations upon the original piece of glass. Transparencies are packed into a small compass, and any number of large pictures can be shown; ah! many more than an ordinary house could display upon its walls, if they were paper and mounted photographs. In conclusion, the writer would ask the readers who have been accustomed to take negatives first, and then by contact make their slides, just to give a trial upon a subject or copy, giving a longer exposure as directed. From such transparencies superior enlargements can be made, and at one operation only. A strong alkaline developer is recommended, because it is necessary to reduce the silver through the entire thickness of film, and generally speaking the ammonium sesqui-carbonate will give more pleasing and satisfactory results than the ordinary liquid ammonia 880.

——:o:——

An 8 ft. Screen Frame for 5s.

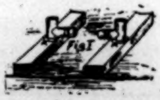
By G. R. Bryce.

The frame which I am about to describe is one I have had made for my own use, and which I I find particularly convenient. Although, perhaps, not possessing the advantages of its higher-priced neighbours, it answers very well for use at home, and on an enlarged scale could be used in any hall. Its size is 8 ft., and it costs about 5s.

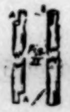
The handy lanternist will be able to make the frame himself, but if not, any plumber or ironmonger will carry out the design at a small cost.

Procure at an ironmonger's eight poles about 4 ft. long. These poles are generally used for physical drill, and resemble what are known as bar-bells without the weights. They will cost about 2d. or 3d. each. Now make, or get made, four straight sockets of strong, stout tin, and also two ⌊ shaped ones. The straight sockets should be about 6 in. in length, and should fit tightly round the poles; the ⌊ sockets should be 4 in. from the corner to each end. Brass sockets would, of course, look better, but would cost more.

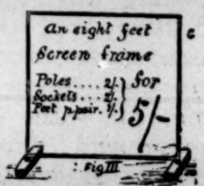
We must now attend to the feet of the frame. These must be made of pieces of wood 19 in. long by 2½ in. wide by 1½ in. deep, and should have all the corners (except those on the lower edges) nicely bevelled, or rounded off, to give them a neater appearance. The feet must be fitted with sockets of the same metal as those already made. In the middle of the upper edge of each of the feet, fit a socket about 3½ or 4 in. long. The sockets should be fastened to the feet by means of screw nails through a flange in the metal (Fig. I., AA). Now to these sockets already fixed there must be soldered at right angles others of 4 in. in length, as shown in Fig. I., BB. The sockets for the entire frame will probably cost about 2s. or 2s. 6d.



From the ends of each of the poles saw off pieces (Fig. II., AA) about 2½ or 3 in. long. Cut them as nearly through the centre as possible, and take care to cut the pieces off on opposite sides of the poles (Fig. II., B B). This will make the poles fit tighter together in the sockets than they would otherwise do.



The frame is now ready to set up, and if the above directions have been correctly followed it should be very rigid. Fig. III. shows the frame completed. Although rigid, this frame will not be found clumsy, and will support a heavy screen. The cost of the erection will, as shown, be about 5s.



This frame could also be used for a 4 ft. screen, as will be readily seen. The poles and feet will be improved by being varnished, or painted some dark colour, as dark red or brown. The sockets might also be improved by being made bright with emery paper, which operation would need to be repeated from time to time.

With an extra pole on each of the sides, the frame could be enlarged to 12 ft., and indeed any size could be formed by the addition of the usual length, or shorter poles. For the larger sizes, longer feet would, of course, be required.

Should it be necessary to tilt the frame, screws might be fitted to the feet after the design of the "Primus" ones already introduced for the lantern.

The only disadvantage which I find with my frame is that it is not very portable, but I think if the whole were packed in a strong box, with compartments for the various parts, and a space for the screen, this disadvantage would be greatly lessened.

I hope that these directione may prove useful to many lanternists who are unable to afford the more expensive and elaborate bamboo or other frame.

——:o:——

Slides for Science Teachers.

No. III.

CAPILLARY ATTRACTION.

By E. D. Bartlett.

Capillary attraction is a phenomenon which, from its name, denotes something of a fine nature. Early philosophers noticed that when a tube having a small internal diameter was placed in water it rose to a great height in the tube. Being more conspicuous in tubes, the fineness of a hair thus gets its name.

When experiments with fine glass tubes are performed upon the lecture table, they can only be seen by a very limited number of students, but when recourse is had to the lantern, then hundreds can observe the phenomenon. Fig. I. shows a row of short glass tubes, varying in internal diameter, secured together at the top by passing them through a piece of wood, so as to form a yoke. The whole are then placed in a glass tank containing a small quantity of coloured water at the bottom; any aniline dye will serve to colour the water. The tubes should first be wetted, and be perfectly clean. Alcohol for certain reasons is better than water, but care should be taken that the cement securing the glass sides of the tank together is not dissolved by it. Another method of showing the phenomenon is by taking two sheets of thin plate glass, and placing them together so that they are touching one another at one end and the other ends are separated by a piece of wood, and the whole being held together by clips or an elastic band placed round them, as shown by Fig. II. When this piece of apparatus is placed in the tank containing a small quantity of coloured water or alcohol in a similar manner to the tubes, the water will rise and form a curve, which is called a rectangular hyperbola, which, on being shown upon the screen, affords more interest to the students than when it is indistinctly seen by only a few as when exhibited upon the lecture table. The two preceding experiments have been performed by using liquids that have wetted the glass, but when a liquid is used, such as mercury, which does not wet the glass, the opposite phenomenon ensues. When a small tube is placed in pure mercury the level of the mercury in the tube is lower than the surrounding body of liquid. The mercury being opaque does not allow us to see the experiment, but the same effect can be obtained by having a bent tube, one arm being of smaller internal diameter than the other, as shown in Fig. III. When showing the experiment upon the screen by this means, it is as well to have two such bent tubes of the same dimensions, or as near as possible alike, one containing mercury and the other water, and thus the two opposite phenomena are readily seen. These bent tubes can be made by taking a piece of tube the diameter of the widest portion, heating the central part of it in a bat's wing gas flame, and drawing it out. You must not expect the first attempt to be a success, but after a little practice success will follow. This phenomena of capillarity is due to the surface tension of the liquids, but for any more information as to the cause I must refer the readers to some of the numerous text-books bearing upon the subject.

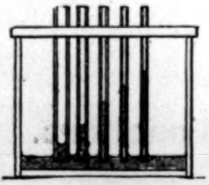


Fig. I.

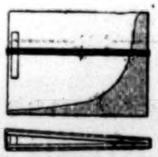


Fig. II.

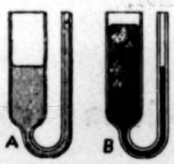


Fig. III.

In nature there are many applications of this phenomenon of capillarity, such as the ascent of the sap in trees, the absorption sponges, and the walking of certain insects upon water.

During the summer, in many of our stagnant pools, a small aquatic insect, the larvæ of the gnat, can be seen wriggling about in the water, and now and again, after a sudden jerk, suspending itself from the surface of the water. Collect some of these and take them home, and place them in a glass tank, where they can be watched. On observing one it will be seen that at the extremity of the body there is a long tube, which it thrusts through the surface of the water, and thus the same phenomenon that makes the water ascend in the small tube allows the insect to be suspended below the surface of the water; the small tube at the extremity of the insect being for the purpose of breathing. When placed in a tank in front of the lantern condenser, and focussed upon the screen, the wriggling of the insect causes some amusement, but beyond this one cannot help thinking of the wise providence of nature, for were it not for the surface tension of the water these small insects would cease to exist.

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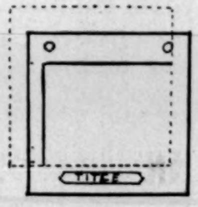
How to Economise.

By George Kilburn.

Yes, I fancy I can hear some readers say—that is what I want to know. Probably they have at last discovered that lantern work is rather costly if strict economy is not practised. It is a very important subject, and one which touches nearly everyone, and everything, owing to the fact that money is required to obtain something necessary with which to accomplish the work we have in view. The object of this paper is not to show how to save large amounts, but to impart to readers information which will enable them to economise in small matters, leaving out for the present larger or more costly items, believing in the old adage that—small beginnings have great endings.

In the making of lantern slides several articles are necessary, such as cover glasses, masks and bindings. Those who make their own slides often find that masks with special openings are required to make the slide most effective, and that the masks obtainable from dealers are usually of one stereotyped pattern and not always suitable. Therefore, to overcome this want I prefer to make my own, and recommend this plan to readers of the Optical Magic Lantern Journal.

Masks can be made from most kinds of opaque paper, black needle paper is suitable, and can be obtained from most photo dealers. The black paper in which some plate makers wrap their plates can be used if smoothed over. Sheets of coloured paper suitable both for masks and bindings can be purchased from any printing establishment at about one penny per sheet, from which several dozen masks can be cut. To cut out masks nothing is better to cut on than a sheet of zinc. To make the masks, cut off several lengths of paper 3¼ ins. wide, lay the paper on the slides and mark with a pencil the size of opening required, then place the paper on the zinc sheet and with a sharp knife—a thin blade one is best—cut out the opening, using a straight cut cover glass as a guide to cut against, as by doing so it is easy to get the sides parallel. It will soon be found a very easy matter to cut a few dozen masks during an evening, which will be more suitable than the commercial ones and also cheaper. One thing has often puzzled me respecting the inartistic shapes of many masks, such as oval, round corners, cushioned and dome shapes. I have tried to fathom in my own mind as to the why and wherefore of these old fashioned styles; but there seems to be a change for the better even in these small matters, as masks of the shape advocated in this article are now offered for sale. We never see artists paint pictures with such inartistic shapes and patterns, then why should we mount our pictures in such styles? I cut mine with square corners and with a rectangular opening whenever the picture will allow, as they look better and are more effective when mounted in this way. To those who are in the habit of making a large number of slides, I would suggest having cut several discs in tin or sheet brass of the desired shapes they mostly use, as it would greatly facilitate the work in cutting when a large number are required. A cheap and handy tool for cutting round spots such as are put on the top corners of masks can be made out of an article sold for the purpose of cutting off cigar ends—they are sold for one penny each. If one of these cannot be got, a short bit of brass tubing will answer, if the edge at one end be sharpened. To use, place a number of slips of white paper on a wood block and give the tube a smart blow; by so doing you will be able to make in a very short time sufficient spots to last a long time.



Strips on which to write the title of picture can be cut from stamp edging—or other paper, and a touch of gum applied.

Binding strips can be cut from the large sheet mentioned previously. Before cutting the strips it is best to paste over one side with gum and allow to dry. Another coating of gum should be given to the strips when about to be used.

A useful article to moisten the gummed paper on can be made in a few minutes by covering a round piece of wood about one inch in thickness with felt cloth; it can be fastened on to the roller with a few tacks. When required it can be moistened with water, and the gummed paper run over it.

Binding strips are easier put on if moistened on both sides. Cover glasses with slight scratches on need not be thrown away, as a slight scratch does not show if care is used when it is put on to the picture, and put the defective part over some portion of subject which is not clear glass. If one has got a large stock of lantern plates and glasses, they can be utilised by any of those processes mentioned in my previous article in October number, viz., Transferrotype, Carbon, or Wet Collodion processes. The diagram given shows my method of cutting masks with a cover glass as a guide.

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The Birth of the Limelight.—No. I.

By W. H. Harrison.

The early history of the limelight naturally divides itself into two parts, namely, the invention of the oxy-hydrogen blowpipe, and the application of the flame thereof to lime for illuminating purposes.

At, and a few years before the beginning of the present century, the attention of the scientific world was considerably drawn to the synthesis of water by the combustion of oxygen and hydrogen gases, and different kinds of appliances were devised by various great and small men of science to experimentally produce water in this manner. These varieties of apparatus consisted, as a rule, of devices to keep up a moderately continuous supply of the two gases, and to burn them inside large glass vessels, on the sides of which the steam produced by the combustion condensed, and then trickled downwards in the form of water.

Among these early inventors was Lavoisier, the great French chemist. His apparatus consisted of a glass globe of thirty-two pints capacity, which he exhausted by means of an air-pump, then filled with dried oxygen, to which more dry oxygen was admitted by a pipe as the combustion proceeded. A small jet passed into the interior of the globe through which jet dry hydrogen could be passed through a pipe from the outside of the globe, and directly the hydrogen was turned on it was ignited by means of electric sparks. These varieties of devices, especially that of Lavoisier, were studied by the inventor of the oxy-hydrogen blowpipe, Robert Hare, of Philadelphia.

Professor Robert Hare, M.D., was born in Philadelphia, January 17th, 1781, and died in the same city, May 15th, 1858. He invented the oxy-hydrogen blowpipe in 1801, when he was twenty years of age, and at a time when he was described in contemporary literature as "Robert Hare, junior." He filled the chair of chemistry at the University of Pennsylvania from 1818 to 1847. In 1818 he was Professor of Natural Philosophy at William and Mary College. In his younger days he managed an extensive brewery belonging to his father. His invention of the oxy-hydrogen blowpipe in 1801 gained for him the Rumford Medal of the American Academy at Boston. He made various discoveries relating to toxicology, and he was the inventor of that useful appliance the valve-cock or gallows screw, by means of which perfectly air tight communication is made between cavities in separate pieces of apparatus. He devised improved forms of the voltaic pile, with which in 1831 voltaic electricity was first applied to blasting under water, and in 1816 he invented a calorimeter. He was a member of the American Academy of Arts and Sciences, of the Philosophical Society, and of the Smithsonian Institute. He wrote several books, most or all of which are in our British Museum Library. A few years before his death he became a convert to spiritualism and lectured and wrote upon its behalf. His chief work on the latter subject was of 460 pages, and entitled "Experimental Investigation of the Spirit Manifestations," New York: Charles Partridge, 346, Broadway, 1858. On page 167 he claims to have been a "spirit medium" to some small extent himself. On August 18th, 1855, he sent a communication about Spiritualism to the American Association for the Advancement of Science, and the standing committee would not allow it to be read, on the ground that the subject did not fall sufficiently within the objects of the Association.

His description of his oxy-hydrogen blowpipe was published in a little book of which the following is a copy of the title page:—"'Memoir on the Supply and Application of the Blowpipe,' containing an account of a new method of supplying the blowpipe either with common air or oxygen gas, and also of the effects of the intense heat produced by the combustion of the hydrogen and oxygen gases. Illustrated by engravings. Published by order of the Chemical Society of Philadelphia to whom it was presented by Robert Hare, junior, corresponding member of the Society, Philadelphia. Printed for the Chemical Society by H. Maxwell Columbia House, 1802." The first public record about Hare's oxy-hydrogen blowpipe is upon the minutes of the Chemical Society of Philadelphia, of the 10th of December, 1801, as follows:—"Mr. Hare then called the attention of the Society to some improvements in his newly invented hydrostatic blowpipe, by which he was enabled to exhibit the combustion of the hydrogen and oxygen gases, the heat produced thereby being very intense."

The importance to chemistry and mineralogy of this new method of obtaining intense heat, was especially recognised in those two sections of the scientific world, so Hare's memoir was quickly republished in different countries. In France it appeared with Hare's name changed to "Harn" by intelligent compositors, in the "*Annales de Chimie*," bearing the date of "30 *Pluviôse, an XI*." This somewhat puzzling way of dating books may be thus explained. After the great French Revolution of above a century ago, which for ever destroyed the influence of the great landowners in France, and established the system of cultivation by proprietors of small farms all over that country, the new powers made the year One to begin on the 22nd September, 1792, and re-named the months. *Pluviôse*, with which we are now concerned, began on our January 20th, and "*An XI*." means the eleventh year of this new era. Hare's memoir was first published in France in February, 1803. This renaming of the months in France was burlesqued in England by some people who called the winter months Freezy, Breezy, Wheezy, and so on. The new French nomenclature for months and years fell into disuse fourteen years after it was established. Their metrical system of weights and measures established directly after the Revolution is now, however, in course of gradual adoption by the whole world.

In this country a description of Hare's blowpipe was first published in "The Philosophical Magazine" of 1802, volume IV., page 238, and copied from the memoir by Hare, ordered to be published by the Chemical Society of Philadelphia. It is entitled "On the Supply and Application of the Blowpipe," and the author begins by describing the defects incidental to working a blowpipe, either by the mouth or by double bellows. He states that the only instrument previously used for continuons combustion with oxygen gas was the gasometer of Lavoisier, which was useful for the purpose, but too cumbrous and expensive.

Casks being cheap, Hare set to work to construct hydrostatic apparatus inside one, which would deliver continuous streams of the two unmixed gases by means of water pressure, and the gases fed an instrument which he called "the hydrostatic blow-pipe." The whole arrangement is fully described by the aid of engravings.

With the cask and its contents we have nothing now to do, but the blow-pipe was mounted on a little table or board, and affixed to the outside of the vertical cask near the mouth of the latter. For the burning of oxygen and hydrogen, the mixing of the two gases took place inside a conical silver nipple, or, as he called it, "frustrum," which is pictured in the memoir. Hare sets forth that the two delivery pipes were joined at their orifices to two holes in the conical nipple of pure silver, of which nipple the mean diameter was one-third and the length three-fourths of an inch. He adds:—"The diameter of one of these holes is large enough for the admission of a common brass pin. The other hole is a third less. They commence separately on the upper surface of the silver frustrum near the circumference, and converge so as to meet in a point at the distance of a line-and-a-half from the lower surface. In the space between the lower surface and the point of meeting, there is a perforation of the same diameter as the larger hole. The manner in which this perforation and the tubular holes communicate one with the other, may be understood from the lines in the form of the letter Y." He then describes how the hydrogen should be turned on first and lit, the oxygen afterwards; how the flame thus obtained was "smaller in size than that of a candle," and goes on to speak of the intense light emitted when the flame is brought to bear upon refractory substances. Here then we have nearly as good an oxy-hydrogen blow-pipe described as we could buy anywhere at the present day.

As a chemist, Hare tried more to fuse refractory substances by the blow-pipe, than to take special notice of the relative intensities of light obtained, but the following sentence shows that he produced what is now known as the limelight:—"Lime and magnesia are extremely difficult to fuse, not only because they are the most refractory substances in nature, but from the difficulty of preventing them being blown on one side by the flame; nevertheless, in some instances by exposure on carbon to the gaseous flame, small portions of these earths were converted into black vitreous masses. Possibly the black colour of these products of fusion may have been caused by iron contained in the coal; for in the high temperature of the gaseous flame, a powerful attraction is reciprocally exerted by iron and the earths." It seems as if he had in this experiment been trying to fuse powdered lime resting upon a lump of coke.

In this memoir, Hare recommended that the holes in the stopcocks of the blow-pipe should be narrow and oblong, to admit of a more gradual increase or diminution of the quantity of gas passed, that the proper proportions in the flame might be more easily adjusted. It will be noticed that he speaks of the nipple or frustrum pointing downwards, and so is it pictured in the engravings which he published. The object was to direct the flame downwards upon minerals resting on carbon, in order, when possible, to effect their reduction by intense heat.

Although this invention is efficient and clearly described, false pretenders to the invention of the oxy-hydrogen blow-pipe a few years later came into the field, and Hare had a warm time of it, as we shall see in our next.

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How to "Doctor" Broken Negatives.

By D. Moore.

Accidents will occasionally happen to the work of the most careful photographer, and few things are more annoying than to find some negative, by which especial store has been set, cracked, broken or defaced. It may spoil a set, or be a record of something impossible to retake; anyway it must, if possible, be saved or restored, and by setting about it in the right way many an apparently hopeless smash may be got into useful working order.

I propose in this article to point out how such repairs may be made in the most effective manner, according to the nature of the damage, from compound fracture to surface scratching.

First, then, comes the smash entire, glass, film, and all in the historical thousands of pieces, having very little apparent connection one with the other. The only possible remedy in this case is to take another negative and commit the original to the dust-hole.

No. 2 may be badly broken, but the film remains entire. Transference of film is undoubtedly the best plan; provide, therefore, a dish sufficiently large to contain the negative with room for the fingers to work in comfortably; lay the negative in the dish face upwards, and pour over it a little very dilute fluoric acid; in a short time the film will float off the broken glass, in which operation it may be assisted with a soft camel's hair pencil; pour off the acid water and give a few changes of clean cold water, then carefully introduce a piece of perfectly clean glass of the proper dimensions below the floating film, spreading it out upon it with the camel's hair pencil, then take hold of the glass with the finger and thumb of one hand, using the finger tips of the other to retain the film on the glass in its proper position, raise the film and support slowly together, letting the water drain away as much as possible. At this stage it can be finally adjusted, and then set on a few folds of blotting-paper edgewise to dry; the process is very easy and very simple, the transferred negative being as good in every respect as the original. Care must be observed to place the film right side out, same as when on its original support, unless it is required to print in carbon. Its adherence to the glass will be perfect without any intervening film if the glass is quite clean and no air bubbles enclosed.

Some operators, having a wholesome fear of dirty glasses, coat them with a thin solution of gelatine to which a little bichromate has been added and exposed to the light, just to render the gelatine insoluble. Anyway, ordinary plain gelatine answers very well without this extra precaution.

No. 3 may have the glass broken and the film partially so, rendering the successful transference a doubtful operation. In this case, having procured a piece of clear glass the exact size of the negative, liberally smear one side with Canada balsam, lay it face up on a warm stove or hold it over a spirit lamp until the balsam is quite thin, adjust the broken negative and press into close contact upon it, then lay on a flat table or shelf to set. If any balsam exudes from the edges or cracks it can be removed by gently rubbing with a rag moistened with turpentine; in a few days it will be quite hard, firm and inseparable. Probably, when the film has been broken, small particles will be chipped off, when the aid of a little colour, applied with a fine brush, will be necessary to fill the missing spaces. The touching must be matched in depth with the surrounding parts. If this is printed just as it is the cracks will probably show as dark and light lines on the print, to avoid which lay over the printing frame one or two thicknesses of white paper—not tissue, but some of considerably more substance, which will somewhat retard the printing, but at the same time prevent the cracks showing. Of course the printing must be done in diffused light, by no means in sunshine. If this is managed throughout as it ought to be, no defect will be apparent on the finished work that cannot be removed by a little careful spotting.

If the negative, glass and film, is broken into entirely separate pieces, the edges of the corresponding parts must be very carefully adjusted on the balsamed glass, and after removing them from the heat, examine to see they have not slipped out of place when laid down to finally set. It is perhaps a wise precaution to bind the edges with gummed paper like a lantern slide, which will preclude the possibility of moving afterwards as they possibly might when being printed in a very high temperature. A merely cracked negative may be attached to a piece of glass by binding without cementing, and printing through white paper.

When a negative just shows signs of a commencing crack, it may be prevented going further by binding the edges from where the crack starts and the side to which it would probably be going with gummed paper without the additional glass, if a little extra care is taken in printing it will be tolerably safe.

Sometimes a negative is so damaged by spots that print white that it is an endless task to spot them all out on the positive. In this case it is a decided saving of trouble to make an enlarged transparency; touch up the transparency, and from it make another negative; by making the transparency much larger than the required negative, the faults are minimized, an important matter when lantern slides are to be produced from it; as every little fault is exaggerated on the screen. It is also better not to focus quite sharp in making the copy; let the image be soft but by no means fuzzy; both in the enlargement and the final copy defects will be less conspicuous than if the utmost definition was secured. This is of course a compromise, and only intended to apply to much-doctored negatives where an image slightly wanting in sharpness is better than having the defects aggressively defined. It may be said, why use a defective negative? The reply is that occasionally one negative of an educational series is spoiled; instruction being more important than an artistic effect, this special negative may be difficult to renew, and if it was be less useful than the damaged one. Scratches are often more trouble to deal with than larger damages, being too numerous and too fine to permit stopping out with brush and colour like larger spaces. Finely powdered lampblack rubbed over the surface with the finger end will sometimes fill them up and prevent them showing, the superfluous black being carefully removed with a soft pad. Extremely fine scratches are perhaps better filled with fine black lead, which is in some cases retained more firmly in the crevices than lampblack; the rubbing should be across the scratches and not following their longitudinal direction. Collodion negatives can be perfectly restored by this means as far as the printing goes, although by reflected light they may look almost unprintable. The sharper the edges of the scratch or crack the better the lead or colour is held.

Insensitive or transparent spots may be filled by working on them with a soft lead pencil, matching up with the surrounding subject in character of touch. When it is necessary to fill up a larger space, the touching on the face of the negative may be advantageously supplemented by slight washes of colour on the back. As a general rule rather do too little than too much; many negatives are spoilt by overwork.

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The Triple Lantern.

By the Showman.

Of all the various forms of the ordinary "magic lantern," its highest commercial development is the upright triple lantern. Although this is so, however, and although it is worth no maker's while to manufacture a form consisting of more than three separate lanterns united in one whole, it by no means follows that we are limited to three as a maximum. I believe that at the old Polytechnic Institution four was the regular working number, and although all the effect sets found in the various catalogues can be exhibited by the aid of a triple lantern, many effect sets can be designed and made which will require four lanterns and upwards for full and complete realization.

I have recently been told of a foreigner exhibiting in Spain who used a double triple lantern, that is to say, six fronts arranged triple fashion on one body, and if readers of the Optical Magic Lantern Journal will refer to the correspondence on the invention of dissolving views of about eighteen months ago, they will find a reference to a Mons. Danquey who is said to have used nine lanterns.

The triple or tri-unial lantern of to-day has had much said against it on various counts, and of all, much is such sheer nonsense that I will not weary the intelligent reader by dealing with it in this article; one or two points will be dealt with at greater or less length, such as the desirability of effects, the difficulty of working, and the weight.

As to effects, these, if properly worked and well chosen (always these conditions, if you please), are pleasing to an average audience who have paid for admission. A few good effects judiciously introduced always appear to me to at once lift the exhibitor above the common herd of lanternists who content themselves with ordinary views. Any reader sceptical on this point is recommended to try the experiment, but let him be careful not to overdo the thing. A day scene changing to a night scene, a winter scene introducing a fall of snow, or an effect of the moon gradually rising is excellent, but must not be repeated *ad nauseam*, as two or three similar effects in succession would be apt to pall. A little judgment is also necessary in selecting effects, as some are quite grotesque; for instance, in the set illustrating the "Village Blacksmith" the interior view of the smithy is sometimes made with a lever movement to the smith's arm. This is absurd, as the whole scene is full of motion; the horse would be flicking ears and tail, the sparks would be flying about, and the lights and shadows thrown by the fire would be continually on the move; besides, who has ever seen a smith strike a blow keeping his whole body, with the exception of one arm, perfectly rigid?

The difficulty of working a triple lantern is so insignificant that when this reason is advanced it may generally be taken as a tacit acknowledgment of incompetency. A man must be a duffer, indeed, who cannot manage a triple lantern properly after reading up the subject, and perhaps having a little instruction and practice as well.

The question of weight introduces perhaps the most reasonable objection of all, and it is my hope to be able to show that the weight of a full-sized lantern need not be so very dreadful. The tyro approaching the subject for the first time may well ask, "What is the weight of a triple lantern?" as I do not remember to have ever seen even the approximate weight mentioned in any catalogue or book on the subject, and to my mind this is an omission, as the owner of a triple generally wants to take it about with him now and then. It is wrong to assume that a triple will weigh, other things being equal, fifty per cent. more than a bi-unial, as forty per cent. will generally cover the difference. The case for a triple is merely some inches taller than for a bi-unial, and has no more fittings in the way of handles and locks, and the base board of the lantern is generally no heavier for a triple than for a bi-unial. The weight of a full-sized mahogany-bodied bi-unial which I possess is 62½ lbs., including jets, dissolver, one set of long focus objectives and a very substantial case. Triples are generally put up with three or four sets of objectives, and perhaps two sets of condensers, and often a base board for a detachable top lantern. These extras are not only mostly unnecessary in themselves, but make the case heavier than necessary, owing to the various fittings, drawers, etc., which are furnished to receive them. It is better for many reasons to have the top lantern a fixture, and if a single lantern is wanted for any particular purpose, to have one specially adapted to that purpose. Then one set of objectives and condensers to suit them can generally be made to answer every purpose, and a little consideration will generally enable a purchaser to determine what the focus of that one set should be. Of course, if a lecturer is certain he is going to address an audience of five thousand one night and fifty the next, a second set of objectives of a different focus may be desirable, as the audience of fifty will generally be accommodated in a room too small to hold the five thousand; but for general work one set of objectives of from 9 in. to 12 in. equivalent focus will be found sufficient, and the saving in expense and weight is very considerable. What should we think of a coachbuilder who offered, say, a dog-cart with two or three sets of wheels for use on different kinds of roads? Fancy a man getting down and changing his wheels for a broader set when he came to a mile or two of very soft road. The coachbuilder knows better, and sends out his vehicles with wheels equally suited to all roads; and though the lantern maker does not adapt his wares in like manner, the lantern user will find no difficulty in doing so for himself.

The first thing to consider is the rooms in which the lantern is to be used. If these are known, and they are only two or three in number, the size of screen can easily be fixed upon, the position of the lantern determined, and a lens of suitable focus selected. When the halls in which it is intended to exhibit are for the most part unknown, the lanternist will have to use his judgment. My own experience of provincial halls, as distinct from school rooms which are generally too small for a lanternist's purpose, is that they average from 18 ft. to 20 ft. in available height, and 80 ft. in length; the width needs no consideration. Now, from the height deduct, say, 3 ft. for the height of the stage, and the most suitable screen will be found to be, say, 15 ft. On this it is decided to project pictures 13 ft. 6 in. square, from slides with cushion shape mounts 2¾ in. square, which seems to be the ruling size nowadays; and the next question is, where is the lantern to stand? If the lecturer has to operate as well, it is perhaps best to place the lantern not too far back, say, about the middle of the hall, and as a lens of 9 in. focus will give the required size picture 44 ft. from the screen, this focus is most suitable. The best plan is for the same person not to combine the offices of lecturer and operator, and in this case the lantern may with advantage be placed further from the screen, say, 59 ft. away, at which distance a lens of 12 in. focus will give the required size of picture. It is inadvisable to employ a lens of larger focus than 12 in., as the operator gets too far away to be able to see clearly to focus without an opera glass, which there is not always time to use. A triple lantern, with one set of lenses, and no drawer for extra ones in the case, will make a much lighter, handier package than otherwise, and the weight may be still further reduced by unscrewing the objectives from the draw tubes and packing them in a small wooden case, which can be carried in the hand. Persons travelling with lanterns can claim the amount of luggage allowed to commercial travellers by the railway companies, viz., 1½ cwt. third-class, 2 cwt. second, and 3 cwt. first. These allowances are for one passenger; if an operator travels as well, the above weights may, of course, be doubled.

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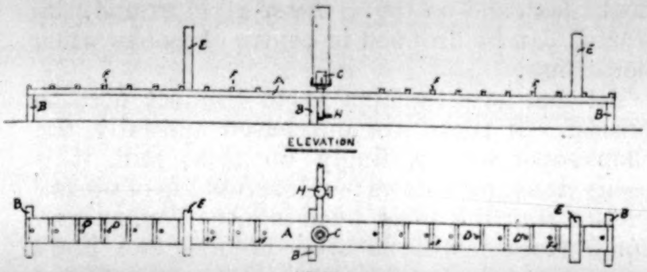
Apparatus for Making Lantern Slides.

By C. S. Scott.

This apparatus is used for correctly exposing lantern slides when printed by the contact process, and consists of a board (A) about 5 ft. 9 in. long × 2¾ in. × ¾ in., supported on three legs (B), having an argand gas burner and chimney (C) in the centre. On either side of the gas burner, along the centre line of the board (A) are bored ten ⅜ in. holes (DDD), spaced 3 in. centre to centre, the nearest hole being 6 in. from the gas burner (C), and the farthest 33 in. The two printing frames (EE) have each a dowel pin, which fits into any of the holes (DDD). Thin strips of woods (FFF) are fastened across the board (A) in such a position as to insure the printing frames (EE) being at right angles to the centre line of the board (A), as shown.



The gas burner used has a regulator so adjusted that when full open a maximum flame of about 2 in. high is obtained, and when shut, enough gas is allowed to pass to keep the burner alight with a small blue flame. An ordinary gas cock (H) could be used instead of the regulator, having a small groove filed round the plug to form a by-pass, and the hole in the plug partially stopped up, so as to allow only enough gas to pass to give a flame about 2 in. high when full open.

To expose the lantern plates, the gas, having previously been lighted, is turned down to a small blue flame, which can be surrounded by an opaque screen if it is considered to be an unsafe light. The printing frames containing the lantern plates, etc., are then each placed (according to the density of the negatives) in one of the holes (DDD) on either side of the gas burner. The screen (if any is used) is then removed, and the gas turned up full for a given time, say ten seconds, and turned down again, by which time the plates will be ready for development.

It is necessary, in the first instance, to ascertain by experiment with three or four negatives of varying density, the exact distance each requires to be from the gas burner to correctly expose a lantern plate, when the time of exposure is, say, ten seconds; but having ascertained this, all other negatives of similar density can be printed from with certainty.

It is convenient to number the holes in the board (A) 6, 9, 12, etc., according to the distance they are placed from the gas burner, and to keep a list of negatives and the distances required, for future reference.

:o:

Signals.

By R. Moss.

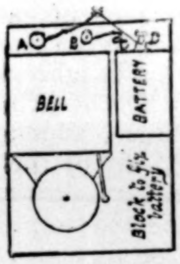
No one who has worked a lantern, or even attended a lecture, likes to hear the signal, whether it be bell, rap, or the not unfrequent—next, sir. At the same time most amateur lanternists are at a loss for a substitute. I, therefore, venture to make one or two suggestions which I have tried, and found to answer well.

For those who are in the habit of illustrating tales, such as Horner's stories, "Peep behind the scenes," or even descriptive readings of travel, it is a good plan to place the reading desk as near the lantern as possible; the advantages are two-fold. Being nearer the centre of the room, the reader has a better chance of being heard by all present; he or she can also communicate with the operator without unduly attracting the attention of the audience.

If this arrangement be adopted, a very simple pneumatic signal answers admirably, while the cost is trifling. It consists of a stout india-rubber ball or small pair of bellows, similar to those fixed on the bottom of toy cats, dogs, &c., sold at twopence or threepence each; this can be made very easily if a suitable ball cannot be obtained, to it is fixed (by means of a small pipe fastened by glue or cement on to the bellows or ball) some $\frac{1}{8}$ inch india-rubber tubing as used for feeding bottles. The length must vary according to the distance, which must also be governed more particularly by the power of expressing air possessed by ball or bellows. I used a ball similar in size and shape to those usually fitted to enemas or douches, and this did well with four yards of tube, at the end of which was fastened a very small metal arrangement similar to a steam whistle. This may be made by soldering a piece of $\frac{1}{4}$ inch brass tube inside a child's thimble, but it is wise to test the distance at which the best sound is given before fixing. It may be necessary, according to shape of thimble, to file end of tube off wedge shape. The reader can hold this shape ball in the hand, and when compressed, the whistle, which should be attached to or near lantern, gives off a gentle "ssh!" easily heard by the operator, but inaudible to the audience. But unless you use a very large ball, say three or four inches diameter, this will not answer well if the lecturer stands near the screen, except with short focus lenses.

For longer distances the best plan is an electric signal, there being really no limit to its powers of transmission, doing just as well at 200 as at two yards. Kindly understand I do not claim any originality in this. Some two years back I heard that one of the operators to the Gilchrist lecturers used one, but I did not see it. Still, I got the idea that it could be done, and after a little bit of puzzling, made one on the following lines, which are so simple that almost anyone can construct one for himself, which will be quite inaudible to all save the operator.

What is wanted is an ordinary cheap electric bell, the smallest size E.C.C., or Gent's "Perfect" dry battery (2s.), a pear pressel (1s.), and so many yards of silk-covered flexible pressel cord, which costs 3s. or less per dozen yards. Many lanternists are also amateur electricians, and probably have a bell by them. This need not be altered in any way; simply cover the bell with chamois leather as follows:—Cut a circle of leather about six inches in diameter, thread some elastic round the edge, tie the two ends so that the ring thus formed is smaller than the bell and will hold the leather cap firmly to it. This deadens the sound to a gentle "whirr." If size is a consideration, the bell can be dispensed with and beater cut off. This will reduce the length to about 4½ inches, or the same as the battery; still, the vibration of the contact breaker against the iron magnet is rather more noisy.



In connecting up the parts, it must be remembered that the one essential of an electric current is a circuit of wire or metal. It will be seen that there are two thumb-screws (A and B) on bell; these are called terminals. On the battery there is one (D), and a projecting piece of wire (C). The bell should be laid in a box and the battery beside it, keeping all terminals at the same end; well scrape about ⅜ inch of the projecting wire of the battery (C), and bend the bright part thus made into a small hook; place this under the terminal nearest to it, and screw down tightly on the wire. There are now two terminals (A and D) left; these are for the two ends of the pressel cord, but, as a test, if with a piece of wire, three or four inches long, you touch each terminal, one with either end, the bell will immediately ring, that is if all is correctly connected and battery sound. To resume, untwist about three inches of the pressel cord; hold the two ends over a match till about ½ inch of the covering is burnt off each, when it will be noticed that the two cords encase a number of fine wires. These should be scraped with a pen-knife, after which one can be secured under the terminal on the battery, the other under that on the bell; twist wires well round the pin and screw nut down tight.

The cord can be wound in many ways; either on a flat reel, similar to those used for best fishing lines, or upon four cleet hooks placed inside the lid of box; but the plan I have adopted is a loose lid, which drops on the bell and battery, this just fitting into the box, and being secured by a small button on each side, keeps them in place. A notch cut in top end by terminals allows cord to be brought from underneath, when it is wound round four cleet hooks fastened on top. After all is wound, the pressel can be dropped in centre of hooks when not in use.

All that now remains is to connect cord to pressel. If these are purchased specially, the shopkeeper will willingly do this; still, it is easily done, as follows:—Unscrew top of pressel (notice that the china push is loose), when four small screws will be seen holding two brass springs; push cord through hole in pressel, and when it comes out near the screws just mentioned, untwist about an inch and burn off silk three-eighths of an inch as previously directed for other end; now loosen one screw on either side nearest the hole, twist one end of wire round each, tighten screws, replace top of pressel with push, and the signal is complete.

There is now a circuit throughout except inside the pressel, which is completed by pressing the china knob, and immediately it is done the muffled bell sounds.

It is as well to stand box so that bell is downwards and terminals up, as a more even motion of the beater is thus secured. The dry battery will last a long time (about a year) with moderate use, and can easily be replaced or recharged when exhausted. Still, even the cost of a new one each season will be a mere trifle compared with the peace of mind it gives both lecturer and operator. The length of cord must, of course, be governed by focus of lens. For 6 inch, one dozen yards will answer every requirement, allowing for looping over gas-pipes, dodging round corners, etc.; while for other distances add the number of yards between the two focuses, but, as this will carry any distance, it will be as well to have enough for the most awkwardly shaped room. Should the operator only work in one hall, a No. 1 Leclanche battery will do as well as the "dry," and last for years. If you have an electric bell fitted in the house you might borrow it. All then needed is the battery, pressel, and cord; but if you do borrow be careful to replace it before the milkman comes in the morning, or there may be trouble in the family.

P.S.—Electrical friends will notice that I have applied the term battery to what strictly speaking is only a cell. Many makers advertise "dry batteries," and not wishing to multiply technicalities, but to be easily understood, the one word "battery" has been used in all connections to indicate the source from which current is obtainable.

———:o:———

Mr. J. B. B. Wellington has erected a large factory at Elstree for the manufacture of bromide and gelatine chloride paper.

*Modern Optical Illusions.—No. VI.

By Edmund H. Wilkie,

Of the late Royal Polytechnic Institution.

(*Continued from p.* 6.)

We left (in last issue) the Italian noble striding towards the torture chamber in the old tower. To cut unpleasant matters short, all kinds of barbarities were exercised upon the unfortunate Count Capo di Monti, to induce him to give up his wealth, but without avail. While in the midst of these horrors, the magician I have mentioned arrived, having been previously summoned in case his aid was required. In consultation with his patron, he explained that the spirit did not leave the body immediately after decapitation, and promised that if the Count was executed in this manner, he would by magic spells compel the head to disclose any secret contained in the brain. The headsman was at once summoned, and the Count being decapitated his head was placed on a plate—then the lecturer paused for a moment—tremolo chords issued from an invisible orchestra, and the curtain slowly rising amidst low rumbling thunder and flashes of lightning, disclosed the scene illustrated in the January number of this Journal, Fig. XVII.

A dungeon with a recess at the back, in which stood a three-legged table supporting a human head on a dish flanked by two grinning skulls, while overhead hung a lamp which illuminated very little more than the interior of the recess. Near the front on the O. P. side stood the headsman clad in red and black leaning upon a large two-handed sword, and close by him the beheading block, while the opposite side was occupied by the magician with a brazier before him. There were other objects on the ground, such as a coffin, and a headless trunk lying on a heap of straw, but as my object is to inform and amuse and not to horrify or disgust, I have to a certain extent "bowdlerised" the scene.

The thunder continued, but it is to be remarked that it was thunder of a very accommodating, not to say polite nature, as it kindly moderated its tone when the magician commenced to speak.

Raising his hand on high he cast one of his spells (red fire) into the brazier, followed by a more potent one (blue fire), all the time reciting an incantation which (green fire) was quite incomprehensible to the (a little lycopodium) mind of the uninitiated.

At last, after the most powerful spell (a pinch of gunpowder) had been cast into the fire, the head, apparently unable to bear it any longer, slowly opened its eyes and spoke as well as the fumes would allow it, asking the wishes of the magician. These he recited at great length, demanding to know where the deceased man's riches were concealed. The head then made a speech acknowledging the power of the magician, and proceeded to explain in what these riches consisted; but just as he commenced entering into minute details as to where they were to be found, the power of the spells expired, the eyes closed, and down came the curtain.

Having seen the effect as it appeared to the visitors, let us inspect the modes of working this extremely dramatic illusion. We shall very quickly understand all about it on reference to Fig. XVIII.

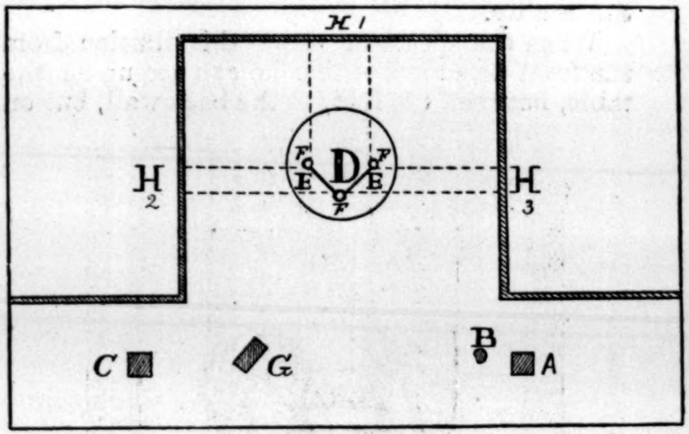


Fig. XVIII.

(a) represents the magician, (b) the brazier, (c) the headsman, and (g) the block. In the niche at the back of the scene the round table (d) is supported by the three legs (fff), between which to the right and left of the front leg are placed the two plain mirrors (ee). The edges of these mirrors at the top and sides are concealed by being let into grooves in the woodwork of the table, and the bottom edges are hidden from view by loosely sprinkling a little straw close against them.

The most particular point in arranging the table and mirrors is to be sure that the legs of the table stand at the same distance from the sides as they do from the back, otherwise the reflections will not register. For instance, in placing the table when fitting up, the width from side to side should be first measured, and if this is, say 12 ft., at 6 ft. from the back, a line should be drawn right across from one side to the other, and another from the centre of the back towards the front, and where these two lines intersect, the spot must be marked on which to place the front leg of the table. When this point is fixed, other lines drawn from it to the corners will give the angle for the back legs; the mirrors will then be found to be at the angle of forty-five degrees with regard to both walls.

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In the space hidden by the combination of mirrors the actor kneels upon the stage, and thrusting his head through a hole in the table top, a dish in sections is arranged round his neck. His face is painted to appear as ghastly as art can make it, and just before the rise of the curtain he inclines his head a little to one side and closes his eyes.

It is almost unnecessary to remark that the painting of the scene should be exactly the same at the back and sides, so that no difference may be perceptible between the reflection and the reality.

When the spectator views this illusion from the front he supposes that he can see under the table, between the legs, to the back wall, but on reference to the diagram it will be apparent that he does not see the portion of the background (H1), but in its place looks upon the reflections of (H2) and (H3), which, when combined, occupy the same space as would be shielded from view by the mirrors. The lamp which illuminates this recess is also carefully placed to evenly illuminate the whole.

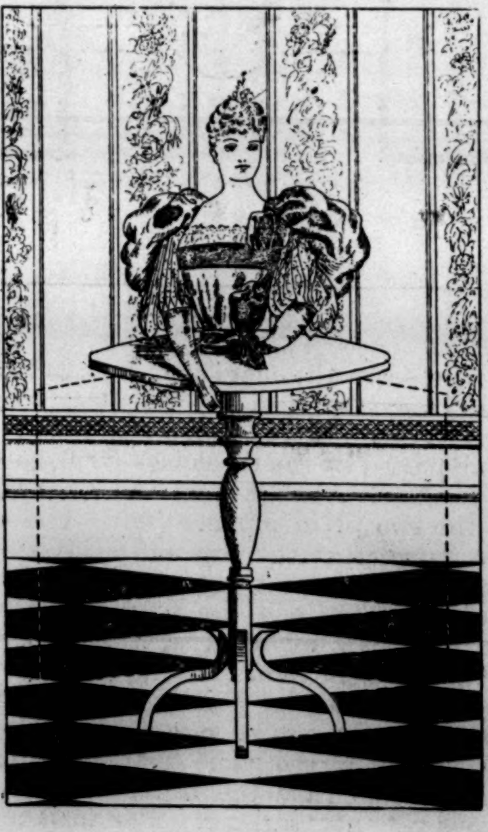


Fig. XIX.

The principle of this illusion has been utilised in many ways, and is the foundation of many of the illusions taken round the country by travelling showmen, as, owing to the small size of the mirrors, it can be prepared at very little expense and is very portable. The most puzzling adaptation of this principle is undoubtedly that illustrated in Fig. XIX., where the upper half of a woman's body is represented as being supported on a table with one leg. We can understand the three-legged arrangement, but this little chess table has a very remarkable appearance, as it would appear at first sight that there is no possibility of concealing any apparatus in this case. But it is in reality very simple, as we shall now see. The two mirrors are placed in the same relative positions to each other, and to the walls as in the last illusion, both having an edge let into the centre leg and extending outwards as shown in the dotted lines in the illustration.

It was found by experiment that if the glass plates were of very fine quality and cleanly cut at the edges, that when viewed from a short distance in front, the edges were practically invisible, but when the spectator moved to the right or left of the centre they became apparent, and also the stage lights became reflected, showing a thin silvery line. In the first place a little lampblack was painted upon this line, but not being successful, it was determined to render the plates as thin as possible at the edges by bevelling, and by this means the plates were not to be distinguished from the surroundings when exhibited in a hall of any considerable size.

The most perfect illusion of this character (with the exception of the decapitated head) was witnessed by the author sixteen years ago in a shop in Tottenham Court Road, which, being to let, was hired in the interim by a travelling illusionist, who exhibited half a young lady called "Fatima."

On entering the "Hall of Mystery," we found it divided into two parts by a barrier extending from side to side, the portion nearest the street being set aside for visitors, while the rear portion contained the illusion.

This illusion, which is set forth in Fig. XX., differed in one material point from the foregoing, inasmuch as the table had four legs. One leg was placed in the centre of the front, two others were at the sides, and one at the back immediately behind the front one. Now the three-legged arrangement has been explained, but where does the fourth one come from? This needs considerable thought to solve the mystery. It will be observed that at level distances on each side of the table stand pedestals supporting lamps ostensibly for the purpose of illuminating the lady's face, and showing that "there is really no deception."

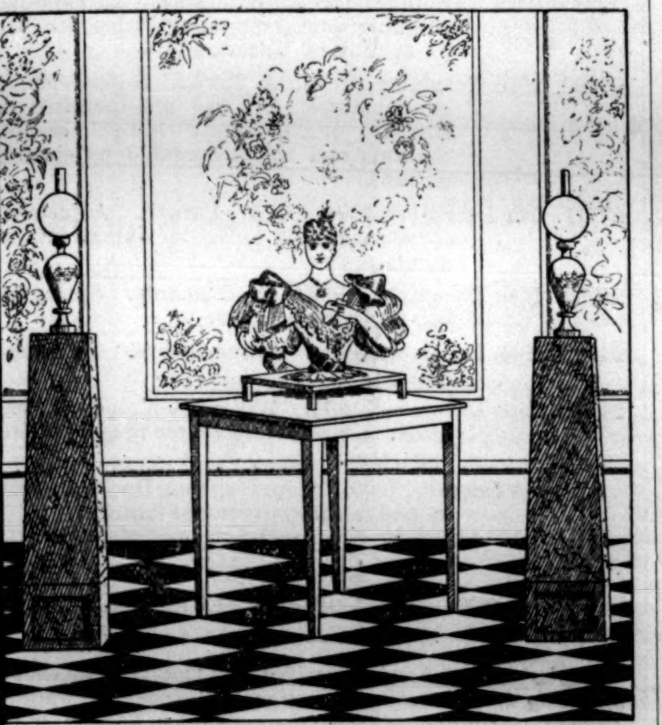


Fig. XX.

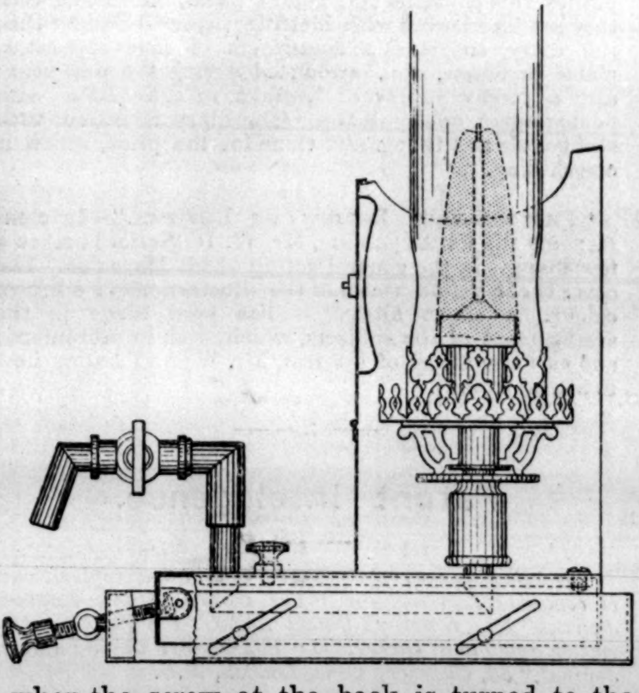
Although the drawing is not to scale, I have taken great pains to keep the correct angles, and if one of the side legs of the table is taken as a centre, it will be found that the lines in the pattern of the flooring upon the junction of which the back leg stands, extends forwards right and left, passing the side legs and also running behind the pedestals. If the squares are counted, it will be noticed that from the centre of the pedestals to the mirrors between the legs, the distance is exactly two squares, therefore, any object placed behind the pedestals would appear reflected just two squares further along the line towards the back; in fact, just where the back leg of the table is placed in the illustration.

Bearing this in mind, it will be readily understood that it is only necessary to place a dummy eg in position behind each pedestal to realise his effect. It is necessary to have a dummy on each side, as the spectators standing to the eft of the centre would see the reflection of hat on the left, and those on the right of the entre, that on the right.

New Apparatus, &c.

INCANDESCENT GAS AS APPLIED TO LANTERNS.

The cut herewith will show the method adopted by Messrs. Philip & Son, of 32, Fleet Street, E.C., for using the incandescent gas for the lantern. The burner is of the usual commercial kind, and it is the mounting that claims our attention. The inlet tube for gas is bent in the manner shown for general convenience, as in this position the tubing can be shipped and unshipped without inconvenience. The tray upon which it is mounted is one of great merit, it is composed of two pieces, the inward one being supported on either side by two pins which slide in slots at the side of the outer tray. These slots are formed in such a manner that when the screw at the back is turned to the right the light is made to rise up, while the vertical adjustment can be made by moving the inlet pipe from one side to the other in which position it can then be clamped by a turn of the screw shown at the top of the tray. The light is boxed in with a neat cover, at the back of which is attached a reflector. So that this light may be used with their lanterns, Messrs. Philip have cut away a small portion of the top (at the back) so as to enable the lamp with its chimney to be readily inserted, after which a hinged piece secures the rigidity of the body. A chimney of sufficient height is also supplied to completely cover the glass chimney.



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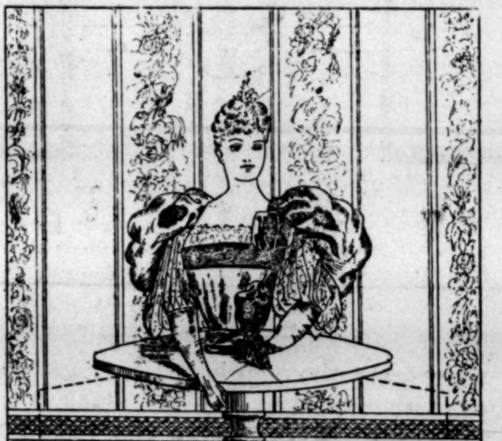

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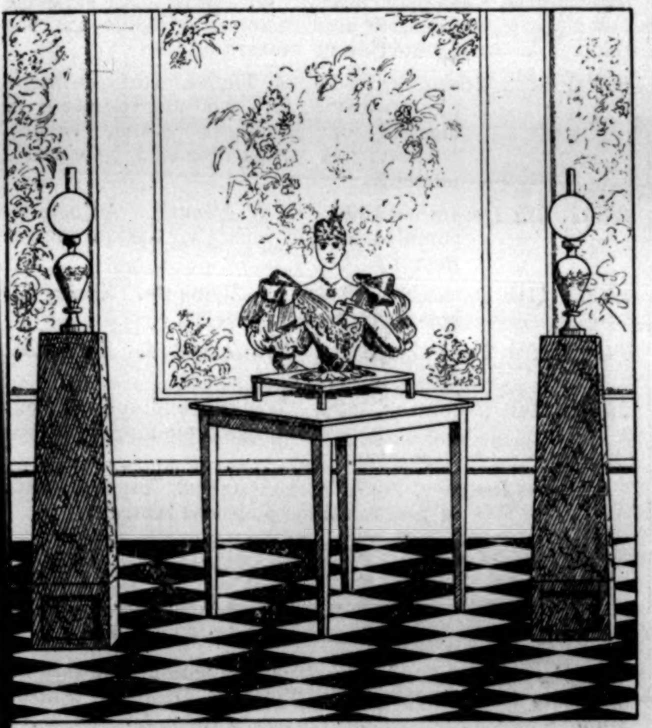

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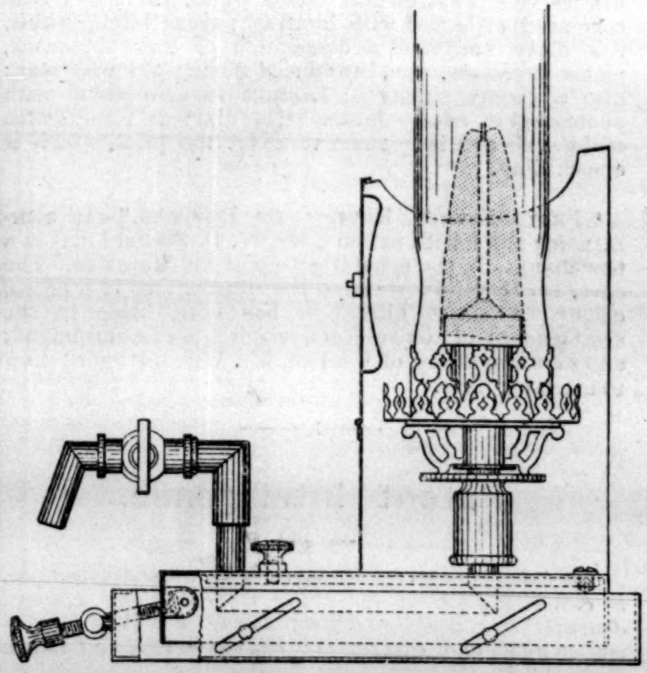

Editorial Table.

Lens Work for Amateurs.—London: Whittaker & Co. This work, by Mr. Henry Orford, gives interesting particulars of the manipulations necessary in making lenses, and exhaustive details are given, whereby those desiring to try their hand at grinding lenses may do so under the guidance of this book. After reading the work, however, one is so likely to be impressed with the difficulties to be overcome and the great importance of exactitude in everything, that few, unless as a fad, are likely to undertake, or rather, we should say, complete the task after having commenced it. A fund of information is however given, whereby users of lenses can the better be enabled to understand the why and wherefore of the subject, and all this is written in a manner that cannot fail to be of interest, whereas as a handbook to an inexperienced hand in the business of lens making, it is simply invaluable. It contains 225 pages and 231 illustrations. Price 3s.

Lett's Photographer's Diary.—Of course, like all diaries, this contains dated blank pages, but in this case they are interleaved with blotting paper. Besides this, the diary contains a description of new apparatus, plates, processes, etc., introduced during the past year; also a goodly supply of formulæ in connection with photographic manipulation. The diary is bound with stiff boards and is splendid value for the price, which is one shilling.

"Photographic Review of Reviews."—In commencing the fourth volume, Mr. W. D. Welford makes a few changes in the general get-up of his Magazine. The cover is of a yellow tint and the illustrations of a brown colour. A slight alteration has been made in the arrangement of the subjects, which is an improvement; and as for matters of interest, Mr. Welford knows how to attend to that.

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Patent Intelligence.

The following list, relating to current Patent Applications, is compiled expressly for "The Optical Magic Lantern Journal" by a registered Patent Agent. For further information apply to S. Dicker, c/o "The Optical Magic Lantern Journal," 56, Chancery Lane, London, W.C.

No. Recent Patent Applications.

18503. 29th September, 1894. Frederick Bartlett. Improvements in optical lantern slide carriers, and the hanging of slides therein.

19611. 16th October, 1894. W. H. Jones. Improvements in dissolvers for optical lanterns.

20095. 20th October, 1894. W. H. Tomlinson. Improvements in or relating to magic lanterns.

20181. 23rd October. George Davenport. Improvements in slide carriers, and apparatus for optical or magic lanterns.

21164. 5th November. John Francis Hall Edwards. Improvements in lantern slide binding clamps.

21240. 5th November. Charles Goodwin Norton. An improved form of cut off for dissolvers for use with optical lanterns, specially relating to bi-unial and triple lanterns.

22704. 23rd November, 1894. W. D. Askew. Improvements in or relating to optical lanterns.

22781. 24th November, 1894. W. Tylar. An exposing chamber and composing table for the production of lantern slides.

22890. 26th November, 1894. A. Taylor. Improvements in apparatus for the manipulation of electric or limelight boxes, scenes, curtains and wings operated by electric current.

23711. 6th December, 1894. C. W. Parnell. Adjustable combinations of lenses for optical instruments.

24082. 11th December, 1894. T. Clements. Spring-lid box for lantern slides.

24655. 19th December, 1894. Frank Alston. An optical lantern.

24821. 20th December, 1894. Willem Geldolph Grollendieck. A novel stereoscopic magic-lantern apparatus.

38. 1st January, 1895. Alex. Hughes. Improvements in and relating to optical lanterns.

Complete Specifications Printed.

Copies of the following specifications may be obtained by remitting 1/- for each specification to S. Dicker, "Optical Magic Lantern Journal," 56, Chancery Lane, London, W.C.

18115 of 1893. Borland. Electric arc lamp for projection purposes.

21880 of 1893. Clifton. Producing enlarged copies of photographs.

23616 of 1893. Lea. Protecting gas cylinders.

24038 of 1893. Cresswell. Stage, etc., lighting.

24135 of 1893. Simpson. Magic lanterns.

24761 of 1893. Manchester Oxygen Company, Limited and W. M. Jackson. Utilising the pressure in cylinders or reservoirs containing compressed gases.

1091 of 1894. Klodt. Optical lantern.

12230 of 1894. Wrench. Magic lanterns.

15819 of 1894. Davenport. Curtain slide carrier for optical lanterns.

16326 of 1894. J. Train. Displaying panoramic scenes by means of the lantern.

18742 of 1893. Wetter (Scheitlin). Exhibiting views in series.

24567 of 1893. Bamford. Magic lantern cylinders.

4098 of 1894. Lake (Actien Gesellschaft für Kohlensäure Industrie). Cap for gas, &c., cylinders.

22954 of 1893. Friese-lucene. Exhibiting panoramic, dissolving or changing views.

158 of 1894. Greenwood & Wallwork. Lantern microscopes.

Correspondence.

SUNDAY WORK WITH THE LANTERN IN SCOTLAND.

To the Editor.

SIR,—I find a paragraph in this month's Journal under the title of "Notes," referring to the Lantern in Churches here in the North, and I may state that it is quite a common thing here during the week, and we are still a little further advanced than this, for last winter I conducted a few lantern entertainments on Sunday evenings in the Mission School at Trinity C.C.

Yours respectfully,
JAMES KELMAN.

33, Shiprow, Aberdeen.
January 13th, 1895.

COPYING HIRED SLIDES AND DISHONESTY.

To the Editor.

SIR,—Will you kindly allow me space in your valuable paper to relieve my—well, mind, of a grumble. When folk in the dull season want to air their grievances they rush to their *Times*, or other paper by which they swear, and their letters appear. By some they are laughed at, others sneer at them, others make a note of them, roll up their sleeves, take up a pen, and give the poor fellow such a dressing that he wishes he never went into print. Well, sir, I have a grievance, and you will say it is a large one when you have perused this; and after reading, I should like to see the whole profession rise up against the hiring out of slides in future (at least, all those uncoloured).

A short time ago I took some negatives which were of special value to me, and made slides therefrom, but did not copyright them. I lent these slides to a friend, who, without asking permission, lent them to a friend of his; this latter, without further ado, made from them a set of negatives and slides which he has sold to one or two people. I went to an exhibition of slides and saw my own, or rather the piracies thereof, thrown on the screen. You may guess my chagrin.

At a public entertainment I saw thrown on the screen what I thought a splendid set of slides (which I well know were made by a large manufacturer and *copyrighted*). At the close of the exhibition and in conversation with the operator, I spoke about the excellence of the slides, but could not understand the toning, as the firm always tone one uniform colour. You can fancy my surprise when he told me he had them from a person who had got the negatives, and that the slides exhibited were made on gelatine plates, which thoroughly accounted for the tone on the screen. For flagrant piracy this "took the cake."

Again, I was asked to make a set of slides, when the following took place:—Oh! you are too stiff in your price; we can make slides for 2½d. each. Indeed! replied I, how's that? Well, you see its done this way. You get everything well prepared beforehand, then write to one of the hiring firms for a set of slides, they come to hand, you put your camera to work, and—hey, presto! for the hiring fee and cost of plates you have a set of slides of your own, which to purchase in the ordinary way will cost £3 to £4. A good bargain, eh!

I'll leave this to your numerous readers to digest at their leisure, but don't you think, sir, that this wants altering?

Just another line or two and I've done. Talk about cutting down prices, Photographers' Benevolent Associations and such like, I think a Trades' Union is very badly wanted for the Slide Makers and Artists, and I'll tell you why. I was asked to give a quotation for colouring. I replied with my usual list, when the answer came back that the set I then held cost but 4s. per dozen, and that they could be coloured by the same person for an extra 2s. per dozen slides, whilst I wanted more for colouring alone than the whole lot came to. In all common sense of fairness is not this too bad? Hanging is too good for such *cutters*; those of us who are trying to get an *honest living* will have to apply to some of the Benevolents to keep us from the workhouse.

Thanking you for insertion,
I subscribe myself,
ONE WHO WANTS TO *LIVE*.

EXPERIMENTS TO ASCERTAIN THE SAFETY OF SATURATORS.

To the Editor.

SIR,—Seeing a paragraph in your admirable journal from Archdeacon Shears *re* "The Safety of the 'Optimus' Saturator," I should be glad of the opportunity to inform your readers, numbers of whom use my saturator (the "Gridiron") as to its absolute safety, efficiency, and general capabilities.

Before this saturator was brought out, I carried out a most exhaustive series of tests to see whether it were possible to explode it.

One of the instruments was enclosed in a small vessel and lighted. The heat from the lime being confined to the box, quickly made the container so hot that it was impossible to touch it, and the ether flame rose to a height of at least three feet. The taps were then closed and a stream of cold water was at once turned on, so as to suddenly cool the apparatus. After this, the saturator was put out into the open air with the thermometer below zero and allowed to stand for about an hour, the oxygen turned on, and it was lighted up. I also tried pulling the oxygen tube off the T piece when the instrument was well alight; it was run until all the ether was exhausted, as well as numerous other means.

Copies of the saturator were sent to Professor G. S. Newth, Royal College of Science, South Kensington; Dr. Kellner, Explosives Department, Woolwich, and Mr. R. R. Beard. Free liberty was given to all the above gentlemen to burst it, but they all failed, and, I think, if it were possible to have done so, one of the above could have accomplished it.

Further, copies have been submitted to Sir George Grove, Dr. Gladstone, F.R.S., and numerous other well-known scientists, all of whom consider it perfectly safe.

I may add that the container is constructed to withstand a pressure of 1,250 lbs. to the square inch, and the utmost I have ever been able to develop inside is about 30 lbs., margin enough for the most nervous anti-saturators.

Trusting I have not trespassed too much upon your valuable space, but hoping that you will find room for this letter, as judging from the numerous sales and still more numerous queries which are addressed to both Mr. Brown and myself with respect to the safety, etc., of this instrument, the subject appears to be of universal interest to lanternists.

Yours truly,
J. G. PARVIN (Inventor).

47, Whittingstall Road, Fulham, S.W.

HANSTANGEL *v.* TYLER.

To the Editor.

SIR,—Will you kindly permit me, through the medium of your valuable paper, to thank most heartily the many friends and customers, who have sent notes of sympathy respecting the unsuccessful issue of my lawsuit. The many letters I have received from friends and customers, go far to reccompense the verdict of a jury who knew I had erred unwittingly, and did all in my power to make amends.

The brief facts of the case are as follows:—

During my visits to Switzerland, Germany, etc., I have at times seen photographs of scripture subjects such as the Crucifixion etc., and on enquiry at Stationers' Hall I found they were not registered, and as I thought there would be no harm for me to make lantern slides of them, I copied five, as this would certainly not injure their sale, but on the contrary, likely to make them more popular. In Feburary last year I was informed by a lawyer that I had done wrong in copying their pictures. I at once went over and took all slides, negatives and the scraps in my possession and offered them twelve guineas; this they accepted as penalties; they would not accept the slides or negatives, and did not issue an injunction to prevent me from selling them, which doubtless they would have done had they, as stated in court, sustained serious damage through the sale of lantern slides. They then issued process for damages, which, as doubtless you are aware, they succeeded in getting £65 and costs; the the latter is of course what they wanted and is by far the most serious part, as justice or even injustice is an expensive thing in "Dear old England."

However, it is well it did not happen to a man with say, a smaller business than my own. With me, it has spurred on with great energy and perseverance, and doubtless in the end will make little or no difference.

It appears in this country, a picture need not be entered at Stationers' Hall if made in Germany, but an Englishman's production must be copyrighted and registered in Germany as well as in his own country.

These are the same Hanstangel of the Empire living pictures celebrity, which case they lost. For a full report of my case see *Times*, January 17th.

Thanking you,
I am, dear sir,
Yours very truly,
WALTER C. TYLER.

48, Waterloo Road, S.E.

——:o:——

Notes and Queries.

Wm. Hodgson.—Your letter was sent to Mr. Ernest Webster, the writer of the article in June issue.

W. J. Bearne writes:—"On page 5 of January number OPTICAL MAGIC LANTERN JOURNAL, you give a representation of an underground chamber where the executioner is waiting arrival of victim. I may be hypercritical, but I wish to call your attention to headsman's block, and to enquire how the operation of neat decapitation could be performed upon such a thing. You will note that a groove is made for reception of neck instead of two depressions the other way: one for chin the other for shoulders. I venture to say that no complete severing could take place in such a manner. The portion of neck that projected above groove could only be cut through; a most unsatisfactory arrangement for all parties." *Ans.*—Had the headsman had an axe, the block should have been as you suggest, but to use a sword in the manner you propose would probably damage it. The victim in this case is supposed to lay his neck in the hollow, and the blow is delivered in such a manner as to be just beyond the block. We think there is little doubt about the effectiveness, but if you doubt it—try it.

J. Wright.—You cannot effect interchangeable registration of your slides, unless you first adjust the base lines of stages. Runners for the purpose can be obtained from almost any lantern dealer.

W. Sparrow.—We do not know the address of the person you allude to, and repeated inquiries on our part lead us to believe that he is quite out of the "lantern line."

R. W. Perry.—Letter was forwarded. Pure hydrogen will not answer well, and sometimes house gas contained in cylinders (compressed) makes the mantle dark. Pass air through a receptacle containing benzoline and it will do.

"*Collection.*"—The slide of plate with "please don't forget the collection" printed round it was illustrated in our issue for December, 1893. It is by Tyler, of London, not Tylar, of Birmingham. You will observe one name contains an "e" and the other an "a." They are different persons.

C. Mountfield Allen (*Brisbane*).—Letter with enclosure to hand. We are pleased to hear that you have met Mr. McCullough, and thank you for good wishes.

A.B.S.—With the cushion mats the 4½ in. condenser would be all right, but with circular mats there would be a slight increase of the light if you moved the slide stage a little from the condenser, so as to allow the whole of the cone of light to be utilised.

D.W.L.—You will find transparent oils the best. The dabbing of the sky so as to leave no marks, can only be acquired by practice, and the touch must become lighter and lighter. Get Bernard's manual of painting slides, 19, Berners-street, London, W.

H.W.A.—For such a large screen (transparent) the material you suggest would easily get damaged. Why not use one of fine calico, and wet it—say, by means of a syringe—at time of using?

E.H.B.—Will write you in a few days, as letter came rather late to include in this issue.

——:o:——

From an Advertiser.—Messrs. Elliman, Sons & Co., whose advertisement appeared in last issue of the OPTICAL MAGIC LANTERN JOURNAL, state that they do not require it to be further inserted, as the last was the means of placing every Set of their Slides that they had made.

From a Subscriber.—Quarter-Master J. Hooper, of 25, Catherine-street, Exeter, when renewing his subscription, writes: "I have been so busy I kept putting it off, and yet I don't know whenever I missed anything more than I have the current number of your valuable OPTICAL MAGIC LANTERN JOURNAL."